

LISTING OF CLAIMS

1. (Previously presented) A process for preparing transformed plant cells or organisms, comprising:
 - a) transforming a population of plant cells, the cells of said population containing at least one marker protein causing a toxic effect directly or indirectly for said population, with at least one nucleic acid sequence inserted in combination with at least one double-stranded marker protein ribonucleic acid sequence or an expression cassette or expression cassettes for expressing said double-stranded marker protein ribonucleic acid sequence, wherein the double-stranded marker protein ribonucleic acid sequence or the expression cassette reduces the expression of the at least one marker protein in the plant cells, and wherein the marker protein converts directly or indirectly a substance X which is nontoxic for said population of plant cells into a substance Y which is toxic for said population,
 - b) treating the transformed population of plant cells obtained in step a) with a substance X at a concentration which causes a toxic effect for nontransformed cells, due to the conversion by the marker protein,
 - and
 - c) selecting transformed plant cells whose genome contains said inserted nucleic acid sequence and which have a growth advantage over nontransformed cells at said concentration of substance X.
2. (Cancelled)
3. (Previously presented) The process as claimed in claim 1, wherein the nontoxic substance X is a substance which does not naturally occur in plant cells or organisms or occurs naturally therein only at a concentration which can essentially not cause any toxic effect.
4. (Previously presented) The process as claimed in claim 1 or 3, wherein the substance X is a 5-fluorocytosine.
5. (Previously presented) The process as claimed in claim 1, wherein the marker protein is a cytosine deaminase.

6. (Previously presented) The process as claimed in claim 1, wherein the marker protein comprises a polypeptide encoded by a sequence according to SEQ ID NO: 1; or a polypeptide comprising the sequence according to SEQ ID NO: 2.
7. (Previously presented) The process as claimed in claim 1, wherein a sequence coding for a resistance to at least one toxin, antibiotic or herbicide is introduced together with the nucleic acid sequence to be inserted and selection is carried out additionally using the toxin, antibiotic or herbicide.
8. (Previously presented) The process as claimed in claim 1, wherein the nucleic acid sequence to be inserted into the genome of the plant cell or of the plant organism comprises at least one expression cassette capable of expressing, under the control of a promoter functional in plant cells or in plant organisms, an RNA and/or a protein which does not cause the expression, amount, activity and/or function of a marker protein to be reduced.
9. (Previously presented) The process as claimed in claim 1, wherein the plant cell is part of a plant organism or of a tissue, part, organ, cell culture or propagation material derived therefrom.
10. (Previously presented) The process as claimed in claim 1, wherein the at least one marker protein is at least one non-endogenous marker protein which converts directly or indirectly a substance X which is nontoxic for said population of plant cells into a substance Y which is toxic for said population, wherein the expression of the at least one marker protein is the expression, amount, activity and/or function of said marker protein, and wherein the selecting is selecting transformed plant cells and/or populations of plant cells, the process further comprising:
 - d) regenerating fertile plants, and
 - e) eliminating by crossing the nucleic acid sequence coding for the marker protein and isolating fertile plants whose genome contains the inserted nucleic acid sequence but does not contain any longer the sequence coding for the marker protein.
11. (Withdrawn) An amino acid sequence coding for a plant 5-methylthioribose kinase, wherein said amino acid sequence comprises at least one sequence selected from the group consisting of SEQ ID NO: 60, 62, 64, 66 and 68.

12. (Withdrawn) A nucleic acid sequence coding for a plant 5-methylthioribose kinase, wherein said nucleic acid sequence comprises at least one sequence selected from the group consisting of SEQ ID NO: 59, 61, 63, 65 and 67.
13. (Withdrawn) A double-stranded RNA molecule, comprising
 - a) a "sense" RNA strand comprising at least one ribonucleotide sequence which is essentially identical to at least a part of the "sense" RNA transcript of a nucleic acid sequence coding for a marker protein, and
 - b) an "antisense" RNA strand which is essentially complementary to the RNA sense strand under a).
14. (Withdrawn) The double-stranded RNA molecule as claimed in claim 13, wherein the marker protein is the marker protein of claim 5.
15. (Withdrawn) The double-stranded RNA molecule as claimed in claim 13, wherein the "sense" RNA strand and the "antisense" RNA strand are covalently linked to one another in the form of an inverted repeat.
16. (Withdrawn) A transgenic expression cassette, comprising a nucleic acid sequence which codes for a double-stranded RNA molecule as claimed in claim 13 or 15 and which is functionally linked to a promoter functional in plant organisms.
17. (Withdrawn) A transgenic vector, comprising a transgenic expression cassette as claimed in claim 16.
18. (Withdrawn) A transgenic plant organism, comprising a double-stranded RNA molecule as claimed in claim 13, a transgenic expression cassette as claimed in claim 16 or a transgenic vector as claimed in claim 17.
19. (Withdrawn) The transgenic plant organism as claimed in claim 18, selected from the group of plants consisting of wheat, oats, millet, barley, rye, corn, rice, buckwheat, sorghum, triticale, spelt, linseed, sugar cane, oilseed rape, cress, arabidopsis, cabbage species, soybean, alfalfa, pea, bean plants, peanut, potato, tobacco, tomato, eggplant, paprika, sunflower, tagetes, lettuce, calendula, melon, pumpkin and zucchini.

20. (Withdrawn) A tissue, an organ, a part, a cell, a cell culture or propagation material, derived from a transgenic plant organism as claimed in claim 19.
21. (Previously presented) The process as claimed in claim 4, wherein the marker protein is a cytosine deaminase.
22. (Previously presented) The process as claimed in claim 21, wherein the marker protein comprises a polypeptide encoded by a sequence according to SEQ ID NO: 1; or a polypeptide comprising the sequence according to SEQ ID NO: 2.
23. (Previously presented) The process as claimed in claim 10, wherein the marker protein is a cytosine deaminase.
24. (Previously presented) The process as claimed in claim 23, wherein the marker protein comprises a polypeptide encoded by a sequence according to SEQ ID NO: 1; or a polypeptide comprising the sequence according to SEQ ID NO: 2.
25. The process as claimed in claim 10 or 3, wherein the nucleic acid sequence to be inserted into the genome of the plant cell or of the plant organism comprises at least one expression cassette capable of expressing, under the control of a promoter functional in plant cells or in plant organisms, an RNA and/or a protein which does not cause the expression, amount, activity and/or function of a marker protein to be reduced.
26. (Previously presented) The process as claimed in claim 3, wherein the at least one marker protein is a non-endogenous marker protein, wherein the expression of the at least one marker protein is the expression, amount, activity and/or function of said marker protein, and wherein the selecting transformed plant cells is selecting transformed plant cells and/or populations of plant cells according to step c), the process further comprising:
- d) regenerating fertile plants, and
 - e) eliminating by crossing the nucleic acid sequence coding for the marker protein and isolating fertile plants whose genome contains the inserted nucleic acid sequence but does not contain any longer the sequence coding for the marker protein.
27. (Withdrawn) A double-stranded RNA molecule, comprising

a) a "sense" RNA strand comprising at least one ribonucleotide sequence which is essentially identical to at least a part of the "sense" RNA transcript of a nucleic acid sequence coding for a marker protein, and

b) an "antisense" RNA strand which is fully complementary to the RNA sense strand under a).

28. (Withdrawn) The double-stranded RNA molecule as claimed in claim 13, wherein the marker protein is the marker protein of claim 6.

29. (Withdrawn) The double-stranded RNA molecule as claimed in claim 27, wherein the "sense" RNA strand and the "antisense" RNA strand are covalently linked to one another in the form of an inverted repeat.

30. (Withdrawn) The double-stranded RNA molecule as claimed in claim 27, wherein the marker protein is the marker protein of claim 5.

31. (Withdrawn) The double-stranded RNA molecule as claimed in claim 27, wherein the marker protein is the marker protein of claim 6.

32. (Previously presented) The process of claim 1, wherein the marker protein is

- a) a cytosine deaminase which converts directly or indirectly a 5-fluorocytosine;
- b) a cytochrome P-450 enzyme which converts directly or indirectly a proherbicide;
- c) an indoleacetic acid hydrolase which converts directly or indirectly an auxin amide compound or a naphthaleneacetamide;
- d) a haloalkane dehalogenase which converts directly or indirectly a dihaloalkane;
- e) a thymidine kinase which converts directly or indirectly Acyclovir, Ganciclovir, or 1,2-deoxy-2-fluoro- β -D-arabinofuranosil-5-iodouracil;
- f) a guanine phosphoribosyl transferase, a hypoxanthine phosphoribosyl transferase, or a xanthine guanine phosphoribosyl transferase which converts directly or indirectly a 6-thioxanthine or an allopurinol;
- g) a purine nucleoside phosphorylase which converts directly or indirectly a 6-methylpurine deoxyribonucleoside;

- h) a phosphonate monoester hydrolase which converts directly or indirectly a glycerylglyphosate;
 - i) an indoleacetamide synthase and an indoleacetamide hydrolase which convert directly or indirectly an indolacetamide;
 - j) an indoleacetamide hydrolase which converts directly or indirectly a naphthaleneacetamide;
 - k) an adenine phosphoribosyl transferase which converts directly or indirectly a 4-aminopyrazolopyrimidine;
 - l) a methoxinine dehydrogenase or a rhizobitoxin synthase which converts directly or indirectly a 2-amino-4-methoxybutanoic acid;
 - m) a 5-methylthioribose kinase which converts directly or indirectly a 5-(trifluoromethyl)thioribose; or
 - n) an alcohol dehydrogenase which converts directly or indirectly an allyl alcohol.
33. (Previously presented) The process of claim 10, wherein the marker protein is
- a) a cytosine deaminase which converts directly or indirectly a 5-fluorocytosine;
 - b) a cytochrome P-450 enzyme which converts directly or indirectly a proherbicide;
 - c) an indoleacetic acid hydrolase which converts directly or indirectly an auxin amide compound or a naphthaleneacetamide;
 - d) a haloalkane dehalogenase which converts directly or indirectly a dihaloalkane;
 - e) a thymidine kinase which converts directly or indirectly Acyclovir, Ganciclovir, or 1,2-deoxy-2-fluoro- β -D-arabinofuranosil-5-iodouracil;
 - f) a guanine phosphoribosyl transferase, a hypoxanthine phosphoribosyl transferase, or a xanthine guanine phosphoribosyl transferase which converts directly or indirectly a 6-thioxanthine or an allopurinol;
 - g) a purine nucleoside phosphorylase which converts directly or indirectly a 6-methylpurine deoxyribonucleoside;

- h) a phosphonate monoester hydrolase which converts directly or indirectly a glycerylglyphosate;
 - i) an indoleacetamide synthase and an indoleacetamide hydrolase which convert directly or indirectly an indolacetamide;
 - j) an indoleacetamide hydrolase which converts directly or indirectly a naphthaleneacetamide;
 - k) an adenine phosphoribosyl transferase which converts directly or indirectly a 4-aminopyrazolopyrimidine;
 - l) a methoxinine dehydrogenase or a rhizobitoxin synthase which converts directly or indirectly a 2-amino-4-methoxybutanoic acid;
 - m) a 5-methylthioribose kinase which converts directly or indirectly a 5-(trifluoromethyl)thioribose; or
 - n) an alcohol dehydrogenase which converts directly or indirectly an allyl alcohol.
34. (Previously presented) The process of claim 10, wherein the non-endogenous marker protein is a non-plant marker protein.